



Billing Code 4333–15

## **DEPARTMENT OF THE INTERIOR**

### **Fish and Wildlife Service**

#### **50 CFR Part 17**

**[Docket No. FWS–R4–ES–2015–0142; 4500030113]**

**RIN 1018–BB09**

### **Endangered and Threatened Wildlife and Plants; Threatened Species Status for Suwannee Moccasinshell**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), determine threatened species status under the Endangered Species Act of 1973 (Act), as amended, for the Suwannee moccasinshell (*Medionidus walkeri*), a freshwater mussel species from the Suwannee River Basin in Florida and Georgia. The effect of this regulation will be to add this species to the List of Endangered and Threatened Wildlife.

**DATES:** This rule becomes effective [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

**ADDRESSES:** This final rule is available on the internet at <http://www.regulations.gov> at Docket No. FWS–R4–ES–2015–0142 and the Panama City Ecological Services Field Office. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at <http://www.regulations.gov>. Comments, materials, and documentation that we considered in this rulemaking will be available by

appointment, during normal business hours at: U.S. Fish and Wildlife Service, Panama City Ecological Services Field Office, 1601 Balboa Avenue, Panama City, FL 32405; by telephone 850-769-0552; or by facsimile at 850-763-2177.

**FOR FURTHER INFORMATION CONTACT:** Catherine T. Phillips, Project Leader, U.S. Fish and Wildlife Service, Panama City Ecological Services Field Office, 1601 Balboa Avenue, Panama City, FL 32405; by telephone 850-769-0552; or by facsimile at 850-763-2177.

Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800-877-8339.

## **SUPPLEMENTARY INFORMATION:**

### **Executive Summary**

*Why we need to publish a rule.* Under the Endangered Species Act (Act), a species may require protection through listing if it is endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered or threatened species can only be completed by issuing a rule.

*What this document does.* This rule will finalize the listing of the Suwannee moccasinshell (*Medionidus walkeri*) as a threatened species. In the near future, we intend to publish a proposed rule in the **Federal Register** to designate critical habitat for the Suwannee moccasinshell under the Act.

*The basis for our action.* Under the Act, we may determine that a species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting

its continued existence. We have determined that the Suwannee moccasinshell is threatened by the degradation of its habitat due to polluted runoff from agricultural lands, pollutants discharged or accidentally released from industrial and municipal wastewater sources and mining operations, decreased flows due to groundwater extraction and drought, stream channel instability, and excessive sedimentation (Factor A); State and Federal water quality standards that are inadequate to protect sensitive aquatic organisms like mussels (Factor D); the potential of contaminant spills as a result of transportation accidents (Factor E); increased drought frequency and degraded water quality as a result of changing climatic conditions (Factor E); greater vulnerability to certain threats because of small population size and range (Factor E); and competition and disturbance from the introduced Asian clam (Factor E).

*Peer review and public comment.* We sought comments from independent specialists to ensure that our listing rule is based on scientifically sound data, assumptions, and analyses. We invited three peer reviewers with expertise in Suwannee moccasinshell biology and ecology, and freshwater mussel biology and conservation, to comment on our listing proposal. We also considered all other comments and information received during the public comment period. All comments and information received are available on the internet at <http://www.regulations.gov> in Docket No. FWS–R4–ES–2015–0142.

### **Previous Federal Action**

Please refer to the proposed listing rule for the Suwannee moccasinshell (80 FR 60335; October 6, 2015) for a detailed description of previous Federal actions concerning this species.

### **Background**

For a more detailed discussion of the biology, status, and threats affecting the species, please refer to the proposed listing rule for the Suwannee moccasinshell published in the **Federal**

**Register** on October 6, 2015 (80 FR 60335). In the proposed rule, we evaluated the biological status of the species and factors affecting its continued existence. Our assessment was based upon the best available scientific and commercial data available on the status of the species, including past, present, and future threats to the species.

### **Summary of Comments and Recommendations**

In the proposed rule published on October 6, 2015 (80 FR 60335), we requested that all interested parties submit written comments on the proposal by December 7, 2015. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in The Lake City Reporter, Columbia County, FL; The Gainesville Sun, Alachua County, FL; and The Valdosta Daily Times, Lowndes County, GA. During the public comment period, we received public comments from 11 individuals or organizations, including 3 submissions by the individuals asked to serve as peer reviewers. We did not receive any requests for a public hearing. All substantive information provided during the comment period is summarized below in the **Summary of Changes from the Proposed Rule** and has either been incorporated directly into this final determination or addressed in the more specific response to comments below.

#### *Comments from Peer Reviewers*

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from three knowledgeable individuals with scientific expertise in the species' biology, habitat, and threats and stream ecology. We received responses from all of the peer reviewers.

We reviewed all comments from the peer reviewers for substantive issues and new information regarding the listing of the Suwannee moccasinshell. In general, the peer reviewers concurred with our methods and conclusions. Where appropriate, we incorporated new information into the final rule as a result of the peer reviewer comments, and any substantive comments are discussed below.

*(1) Comment:* One peer reviewer expressed concern that there has been no modern taxonomic study to assess whether the Suwannee moccasinshell is a distinct species from the Gulf moccasinshell. The peer reviewer mentioned that shell morphological traits are notoriously problematic taxonomic features that have led to the misclassification of many freshwater mussel taxa, and that only with molecular data can you be reasonably sure that you are dealing with separate species. The reviewer also added that there was no reason to suspect that the Suwannee moccasinshell is not a valid species.

*Our Response:* We relied on the best information currently available regarding the taxonomy of the species. The Suwannee moccasinshell is considered a distinct taxonomic entity by the general scientific community, and we are aware of no contradicting views on the taxonomy of this entity. However, in the final rule we have refined our discussion of the species' taxonomy and added a recent publication by Johnson *et al.* (in press) to the list of authors who recognize the entity as a separate species.

*(2) Comment:* One peer reviewer expressed concerned about the lack of surveys in the Withlacoochee drainage, and stated that this stream still supports large populations of freshwater mussels. The reviewer stated that there has apparently been very little recent work in the system, and that intensive surveys should be done in the Withlacoochee Drainage to determine the status of the Suwannee moccasinshell in this system.

*Our Response:* We agree and stated in the proposed rule that additional survey work is needed in the Withlacoochee River subbasin (80 FR 60335, October 6, 2015; p. 60338). Since publishing the proposed rule, some additional surveys were conducted in the lower Withlacoochee drainage. Those surveys are included in Table 2 below. Surveyors using snorkel gear searched seven locations in the lower basin in September 2015. Several mussel species were detected, but not Suwannee moccasinshell. Likely contributing factors for non-detection include the conditions noted at survey locations within this species' historical range, including an odor of treated sewage and considerable amounts of filamentous algae (an indicator of excess nutrients).

Also, since the proposed rule was published, the Service's Panama City Field Office received two reports of mussel surveys conducted in 2005 and 2007 around the State Road 31 Bridge in Georgia, where the Suwannee moccasinshell was collected in 1969. Comprehensive surveys were conducted over several days using SCUBA gear to search a 1.5-kilometer reach (approximately) of the Withlacoochee River (Bowers 2006, entire; Bowers 2007, entire). The species was not detected during these dive surveys. These additional data support our conclusion that the Suwannee moccasinshell may no longer occur in the Withlacoochee subbasin.

(3) *Comment:* One peer reviewer commented that spate flows (e.g., sudden fast flows with high sediment loads) in the upper Santa Fe River should be listed as a threat.

*Our Response:* We agree and have added this threat to the Factor A discussion under the heading of *Stream Channel Instability*.

(4) *Comment:* One peer reviewer commented that deadhead logging, though probably past its heyday, is still a potential threat to the Suwannee moccasinshell as it can cause destabilization of microhabitat occupied by freshwater mussels. The peer reviewer also stated

that the impact of constant and, in many cases, large boat wakes frequently striking shore is a problem, especially in the lower Santa Fe River, which is a relatively narrow channel frequented by large numbers of boats.

*Our Response:* We appreciate this information, and we have added a discussion of both activities to the Factor A discussion under the heading of *Stream Channel Instability*.

(5) *Comment:* One peer reviewer suggested deleting flathead catfish as a potential threat. The reviewer pointed out that there is only one record from the Suwannee River of flathead catfish, which was collected near Branford in 1989, and the species is not currently considered to be extant in the basin. The reviewer believed that flathead catfish may represent a future threat if they ever become successfully established in the basin.

*Our Response:* Based on this information, we agree that flathead catfish are not a significant concern at this time and have deleted the discussion from the final rule.

#### *Comments from States*

The proposed rule was reviewed by the three members of the Florida Fish and Wildlife Conservation Commission's (FWC) freshwater mussel conservation program, one of which was asked to serve as a peer reviewer. The comments were combined into one document and submitted as a single peer review. The FWC reviewers provided additional information and clarification on threats, and provided updated information on surveys conducted by the agency. Their comments are addressed in Comments 3, 4, and 5 above, and are incorporated into the final rule as appropriate. The FWC generally concurred with our methods and conclusions, and supports the listing.

We also received comments from the Florida Department of Transportation (FDOT). They are addressed below.

*(6) Comment:* The FDOT expressed concern about our use of the term “transportation accidents” with regard to possible contamination spills. The agency stated that transportation agencies have protocols in place to address and track these spills.

*Our Response:* We continue to maintain that accidents involving vehicles transporting large volumes of hazardous materials are a potential threat to the Suwannee moccasinshell. Accidental spills of hazardous materials or organic materials into streams as a result of transportation accidents have occurred in the past. Incidents in or near streams that illustrate the potential risk include two train derailments: one on September 12, 2006, that spilled four tank cars of soybeans into a tributary of Yellow Leaf Creek in Alabama resulting in a drastic decline in dissolved oxygen, killing fishes, mussels, and snails (USFWS 2009); and another on January 28, 2014, that spilled up to 30,000 gallons of phosphoric acid into a small tributary to the Escambia River in Florida (NorthEscambia.com), and was contained before reaching critical habitat in the mainstem.

*(7) Comment:* The FDOT expressed concerns regarding our discussion of water quality degradation and increased sedimentation. The agency commented that State DOTs abide by rigorous environmental permit processes (both Federal and State) that address these matters including requirements of the ESA. Specifically, roadway projects have to obtain a State Water Quality Certification in order for the U.S. Army Corps to issue a permit under section 404 of the Clean Water Act.

*Our Response:* FDOT’s standard Best Management Practices (BMPs) for erosion and sediment control are a good baseline measure to protect water quality. However, the success of these measures is highly dependent on their contractors to meticulously implement, monitor, and repair erosion control measures. In instances where endangered and threatened species are



present in combination with highly erodible soils, a higher level of protection may be needed. While not frequent, instances of erosion control failures that have impacted waterways during road construction in Florida have been documented.

*(8) Comment:* The FDOT commented that the following activities listed in the proposed rule (80 FR 60335, October 6, 2015; p. 60347) as potentially harming the Suwannee moccasinshell and, therefore, resulting in take, could impact State DOT projects: destruction or alteration of the species' habitat by discharge of fill material; dredging or modification of stream channels or banks; and discharge of pollutants into a stream or into areas hydrologically connected to a stream occupied by the species.

*Our Response:* The majority of the stream channels currently occupied by the Suwannee moccasinshell, including the Suwannee River mainstem and the lower Withlacoochee River, are also occupied by, or designated as critical habitat for, the federally threatened Gulf sturgeon. The lower Santa Fe River is the only area occupied by Suwannee moccasinshell, but not by Gulf sturgeon. Therefore, because activities that affect the Suwannee moccasinshell would also affect the Gulf sturgeon or its habitat (for example, dredging, filling, modification of stream channels or banks, and discharge of pollutants), in the majority of the Suwannee moccasinshell's current range, the FDOT already consults on such activities. When formal section 7 consultation is required, we will work with the FDOT to find solutions that will reduce impacts to all listed species and aquatic habitats, while allowing the activity to proceed.

#### *Public Comments*

*(9) Comment:* One commenter expressed concern about our finding that forestry is a contributing threat to the Suwannee moccasinshell. The commenter provided information on the implementation rates and effectiveness of forestry BMPs and cited various studies purported to

demonstrate that forestry BMPs minimize erosion and sediment transport to streams below levels that degrade aquatic habitats and/or harm aquatic species, including the Suwannee moccasinshell.

*Response:* We appreciate the commenters' support of forestry BMPs as a means of protecting water quality and we concur that, when properly implemented, forestry BMPs can reduce erosion and sedimentation levels, especially as compared to past forestry practices. However, the best available data indicate that, even when forestry BMPs are properly implemented, erosion rates at harvested sites, skid trails, unpaved haul roads, and stream crossings are significantly higher than from undisturbed sites. We consider sediment from silvicultural activities to be one of many potential sediment sources within the Suwannee River watershed.

### **Summary of Changes from the Proposed Rule**

After consideration of the comments we received during the public comment period (refer to **Summary of Comments and Recommendations** above), and new information published or obtained since the proposed rule was published, we made changes to the final listing rule. Many small, nonsubstantive changes and corrections, not affecting the determination (e.g., updating the **Background** section in response to comments, minor clarifications) were made throughout the document. Below is a summary of substantive changes made to the final rule.

(1) The *Taxonomy* discussion was refined slightly. The distinctiveness of Suwannee moccasinshell as a separate species was further bolstered by a recent study (Johnson *et al.* in Press).

(2) Table 2 was added to provide a clear and updated summary of all recent survey information.

(3) The flathead catfish (*Pylodictis olivaris*) was removed as a threat to reflect information provided by the Florida FWC indicating that flathead catfish have not become established in the Suwannee River Basin.

(4) *Stream Channel Instability* was added as a threat under *Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range*. The new discussion adds threats identified by a peer reviewer that include scouring flows, boat wakes, and deadhead logging.

### **Summary of Biological Status**

Below we present a summary of the biological and distributional information discussed in the proposed listing rule. We also present new information published or obtained since the proposed rule was published, including a study by Johnson *et al.* (in Press), additional survey data, and information received during the comment period.

The Suwannee moccasinshell (*Medionidus walkeri*) is a small freshwater mussel of the family Unionidae. The species was originally described by B.H. Wright in 1897. It was briefly considered a synonym of *Medionidus penicillatus* (Clench and Turner 1956), but subsequently was recognized as a valid species by Johnson (1977, pp. 176–177), who described *walkeri* as being “quite distinct” from the other members of the genus. Its sharp posterior ridge and generally dark, rayless shell distinguishes it from other species of *Medionidus* in Gulf drainages (Johnson 1977, p. 177; Williams and Butler 1994, p. 86). Its distinctiveness as a separate species is recognized by recent authors (Williams and Butler 1994, pp. 85–86; Williams *et al.* 2014, pp. 278–280; Johnson *et al.* in Press).

The Suwannee moccasinshell typically inhabits larger streams where it is found in substrates composed of muddy sand or sand with some gravel, and in areas with slow to

moderate current (Williams and Butler 1994, p. 86; Williams 2015, p. 2). The species is also associated with large woody material, and individuals are often found near embedded logs. Like other freshwater mussels, the Suwannee moccasinshell requires a fish host to complete its life cycle. Reproduction in freshwater mussels is unique in that they require specific fish species to serve as hosts for their larvae (called glochidia); the larval mussel must attach to the gills or fins of a suitable host fish in order to transform into a juvenile mussel. Parasitism serves as a means of upstream dispersal for this relatively sedentary group of organisms (Haag 2012, p. 145). A recent study examining the early life history of the Suwannee moccasinshell has provided information about its reproductive biology. Females were found gravid with mature glochidia from October to May (Johnson *et al.* in Press). In laboratory trials, Suwannee moccasinshell glochidia transformed only on darters—primarily on the blackbanded darter (*Percina nigrofasciata*) and to a lesser extent on the brown darter (*Etheostoma edwini*)—indicating that the mussel is a host specialist and dependent on darters for reproduction (Johnson *et al.* in Press). Darters are small, bottom-dwelling fish that generally do not move considerable distances (Freeman 1995, pp. 363–365; Holt 2013, p. 657). Thus, the exclusive use of darters as a host may limit the Suwannee moccasinshell’s ability to disperse and to recolonize some areas from which it has become extirpated.

The Suwannee moccasinshell is endemic to the Suwannee River Basin in Florida and Georgia. Its historical range includes the lower and middle Suwannee River mainstem, and two large tributary rivers—the Santa Fe River subbasin and the lower Withlacoochee River mainstem (Williams 2015, p. 7). An evaluation of historical and recent collection data show that its range has declined in recent decades, and the species is presently known only from the middle Suwannee River and lower Santa Fe River in Florida. In the Suwannee River mainstem, the

species occurs intermittently throughout a 75-mile (121-kilometer) reach of the middle river, and sporadically in a 28-mile (45-kilometer) segment of the lower Santa Fe River. The species was not detected in recent surveys in the Withlacoochee River or in the upper Santa Fe River subbasin. A summary of Suwannee moccasinshell occurrence and distribution by waterbody are shown in table 1 below.

In addition to a reduction of range, recent surveys targeting the Suwannee moccasinshell show that its numbers are very low. Florida FWC and Georgia Department of Natural Resources biologists surveyed 144 sites during 2013–2015, covering nearly all of its historical range (FFWCC 2015 unpub. data; USFWS 2015 unpub. data). Suwannee moccasinshell densities were found to be exceedingly low in comparison to other mussel species, particularly in the lower Santa Fe River. A summary of survey results are shown in table 2 below.

Table 1. Summary of Suwannee moccasinshell populations by waterbody.

<b>Water Body</b>	<b>State and County</b>	<b>Occurrence*</b>	<b>Distribution and Abundance</b>
Suwannee River mainstem	FL: Madison Suwannee, Lafayette, Gilchrist, Dixie, Levy,	Recent	Occurs in a 75-mile reach of middle river; abundance low but population stable. May be extirpated from the lower river.
Lower Santa Fe River	FL: Suwannee, Gilchrist, Columbia, Alachua, Union, Bradford	Recent	Occurs in 28-mile reach in lower river; drastic decline and abundance very low.
Upper Santa Fe and New Rivers	FL: Union, Alachua, Bradford	Historical	May be extirpated; last collected in system in 1996.
Withlacoochee River	GA: Brooks, Lowndes; FL: Madison, Hamilton	Historical	May be extirpated; last collected in system in 1969.

\* Recent occurrence is based on collections made from 2000 to 2015; historical occurrence is based on collections made prior to 2000.

Table 2. Summary of 2013–2015 Suwannee moccasinshell surveys by waterbody.

<b>Water Body</b>	<b>Survey Year</b>	<b>Number of Sites</b>	<b>Total Mussels</b>	<b>Live Suwannee moccasinshells</b>
Suwannee River mainstem	2013–2015	103	15,195	73
Lower Santa Fe River	2015	15	7,044	1
Upper Santa Fe and New Rivers	2015	19	1,969	0
Withlacoochee River	2014–2015	17	4,377	0

Historical mussel collection data are often limited, making it difficult to compare trends in abundance over time. However, it does seem clear from museum collections that Suwannee moccasinshell numbers have declined over time, especially in the Santa Fe River subbasin where it has declined dramatically in recent decades (see our discussion on page 60339 of the proposed rule (80 FR 60335, October 6, 2015). Despite its low abundance, populations in the Suwannee River mainstem presently appear to be stable. We attribute its persistence in the mainstem to the stability of habitat and the attenuation of certain threats by larger flow volumes (threats are summarized below).

### **Summary of Threats**

Below we present a summary of the threats information discussed in the proposed listing rule. We also present new information published or obtained since the proposed rule was published and information received during the comment period.

#### *Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range*

The stream habitats of freshwater mussels are vulnerable to degradation and modification from a number of threats associated with modern civilization. Within the Suwannee River Basin, a rapidly growing human population and changing land use represent significant threats to the

aquatic ecosystem, primarily through pollution and water withdrawal (Katz and Raabe 2005, p. 14). The Suwannee moccasinshell's habitat is subject to degradation as a result of pollutants discharged from industries, mines, and sewage treatment facilities, polluted runoff from agricultural lands, reduced flows as a result of groundwater extraction and drought, and stream channels destabilized by scouring floods and other perturbations.

Two pollutants of particular concern to the Suwannee moccasinshell are ammonia and pesticides. Both are highly toxic to freshwater mussels, particularly juveniles, and both are widely used on agricultural lands within the basin. Ammonia is also a common pollutant in wastewater discharged into streams of the basin by numerous permitted wastewater treatment facilities. Another concern is that nitrogen and phosphorus levels have increased within the range of the Suwannee moccasinshell. In excess, these two plant nutrients may indirectly affect the species by causing algal blooms that deplete oxygen and cause dense mats of filamentous algae that entrain juveniles.

Perhaps the most significant threat to Suwannee moccasinshell populations is flow reduction due to the withdrawal of groundwater. Groundwater pumping for agricultural purposes in neighboring basins, along with periods of extreme drought conditions, has caused unprecedented declines in groundwater levels, resulting in decreases in the amount of groundwater entering streams of the basin. Flow declines of approximately 30 percent have been observed in the lower Santa Fe and lower Suwannee Rivers; the upper Santa Fe River, once a perennial system, has gone dry multiple times since 2000 (Johnson *et al.* in Press). Reduced flows may exacerbate drought conditions (elevating temperature, pH, and pollutant concentrations (causing biotic die-off, and reducing dissolved oxygen), which in turn may have

lethal or other harmful effects (prematurely aborting glochidia, reduced growth rates) to the species, or may cause stranding mortality.

### *Stream Channel Instability*

*In the following paragraphs, we include a full discussion of stream channel instability, a threat identified by a peer reviewer and not discussed in the proposed rule.*

The Suwannee moccasinshell requires geomorphically stable stream channels to maintain its habitats. Channel instability occurs when the natural erosion process is accelerated, leading to erosion (degradation) and sediment deposition (aggradation). Channel instability can cause profound changes to mussel habitats due to scouring and sediment deposition (Hartfield 1993, p. 138). Channels can become destabilized as a result of physical alterations to the stream channel (such as dredging, straightening, impounding, and hardening), and because of alterations to the flow regime. Changes to land use that accelerate surface runoff (for example, croplands and development) can increase the amount and rate in which stormwater runoff enters stream channels, causing increases in flow volume and velocity. These more forceful flows can scour the streambed and banks and eventually lead to channel incision (lowering of the streambed) (Booth 1990, p. 407; Wood and Armitage 1997, pp. 204–205; Doyle *et al.* 2000, pp. 156–157, 175). Disturbance to riparian areas (particularly the removal of vegetation) can also lead to bank erosion (Rosgen 1996, pp. 8–11). This accelerated erosion process can also cause sedimentation in downstream areas (Waters 1995, pp. 44–47, 172; Rosgen 1996, pp. 6–31, 8–32–33; Doyle *et al.* 2000, p. 156). Sampling conducted in 2015 by FWC biologists in a reach of the Santa Fe River in Alachua County revealed the river has highly eroded banks and an incised channel with much unconsolidated sand substrates (FFWCC 2015 unpub. data). Increased stormwater runoff from a nearby town and surrounding agricultural lands are likely responsible for these changes in



channel geomorphology (M. Rowe, *in litt.*).

Other sources of physical disturbance to mussel habitat include motorboat wakes frequently striking shores and the removal of large woody material. Boat wakes have been shown to cause significant bank erosion and sediment resuspension in river systems (Bauer *et al.* 2002, pp. 156–161). This problem appears to be especially severe in the lower Santa Fe River, which is a relatively narrow channel and is frequented by large numbers of motorboats (M. Rowe, *in litt.*). The removal of large woody material, especially wood embedded in the substrate, can cause the destabilization of microhabitat occupied by the Suwannee moccasinshell. Suwannee moccasinshell individuals are often found near embedded logs, which may stabilize the habitat and provide refuge for its host fishes. Over 7,200 pre-cut submerged (deadhead) logs have been removed from the Suwannee River, more than any other river in Florida (FDEP 2014 unpub. data). The removal of deadhead logs and snags can compromise habitat stability and affect channel morphology (Watters 1999, p. 269; Linohss *et al.* 2012, p. 160).

Many of the threats discussed above are greater in the two tributary systems, as evidenced by the species' possible disappearance from the Withlacoochee River and upper Santa Fe River subbasins. Currently, nearly the entire population resides in the middle reach of the Suwannee River mainstem. In the mainstem, flows are generally sustained, and pollutant concentrations may be diluted by larger flow volumes. In addition, geomorphically stable limestone and reduced surface runoff contribute to habitat stability in the mainstem Suwannee River.

While there are programs in place that may indirectly alleviate some detrimental impacts on aquatic habitats, there currently are no conservation efforts designed specifically to protect or recover Suwannee moccasinshell populations. Therefore, we conclude that habitat degradation

is presently a significant threat to Suwannee moccasinshell populations in the Withlacoochee and Santa Fe River subbasins, and a moderate threat to populations in the Suwannee River main channel. This threat is expected to continue into the future and, because it is linked to human activities, is expected to increase as the human population within the Suwannee River Basin grows.

*Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes*

The Suwannee moccasinshell is not a commercially valuable species, and collecting is not considered a factor in its decline. Therefore, we do not consider overutilization to be a threat to the Suwannee moccasinshell at this time.

*Factor C. Disease or Predation*

We have no specific information indicating that disease or predation is negatively impacting Suwannee moccasinshell populations. Therefore, we do not consider these to be threats to the Suwannee moccasinshell at this time.

*Factor D. The Inadequacy of Existing Regulatory Mechanisms*

Despite existing authorities such as the Clean Water Act, pollutants continue to impair water quality throughout the range of the Suwannee moccasinshell. State and Federal regulatory mechanisms have helped reduce the negative effects of point source discharges since the 1970s, yet these regulations are difficult to implement and regulate, and may not provide adequate protection for sensitive aquatic organisms like freshwater mussels. While new water quality criteria are being developed that take into account more sensitive aquatic species, most criteria currently do not. Thus, we conclude that existing regulatory mechanisms do not adequately protect the Suwannee moccasinshell.

*Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence*

Several other natural and manmade factors are negatively impacting the Suwannee moccasinshell. The Gulf coastal region is prone to extreme hydrologic events including droughts and flooding. Extended droughts (along with groundwater extraction) can cause severely reduced flows, exposing mussels to higher water temperatures, lower dissolved oxygen levels, and predators. Heavy rainfall events can cause scouring floods that dislodge mussels and alter stream channels, especially in smaller streams. Although floods and droughts are a natural part of the hydrologic processes that occur in river systems, these events may exacerbate the decline of mussel populations suffering the effects of other threats.

Accidental contaminant releases from industrial and municipal facilities and mining operations are a constant threat to the Suwannee moccasinshell as numerous potential sources are present throughout the basin, and these spills have occurred in the past. Spills as a result of transportation accidents are a potential threat as numerous railroads and highways traverse the basin. Because of the linear nature of the Suwannee moccasinshell's habitat and its reduced range, a major contaminant spill has the potential to impact a large portion of the population.

The introduced Asian clam (*Corbicula fluminea*) is widespread in the Suwannee River Basin, and can be found in high densities within the range of the Suwannee moccasinshell. Although the specific interaction between the Asian clam and native mussels is not well understood, enough information exists to conclude that dense Asian clam populations would negatively affect native mussels.

Numerous impacts associated with changing climatic patterns may amplify stressors currently impacting the Suwannee moccasinshell, including the prospect of more frequent and intense droughts and increased temperatures. These changes would further exacerbate current problems associated with reduced flows and degraded water quality. Saltwater encroachment

also has the potential to impact moccasinshell populations in the lower river, especially during low flow conditions. The variables related to climate change are complex, and it is difficult to predict all of the possible ways climate change will affect Suwannee moccasinshell populations. However, information available is sufficient to indicate that climate change is a significant threat in the future, as it will likely exacerbate certain stressors already affecting the species.

Finally, the Suwannee moccasinshell's small population size and restricted range make it more vulnerable to threats associated with habitat degradation and catastrophic events. Therefore, we find that other natural or manmade factors, as a whole, pose a significant threat to the Suwannee moccasinshell, both now and continuing into the future.

### **Determination**

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination.

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Suwannee moccasinshell. The primary reason for the Suwannee moccasinshell's decline is the degradation of its habitat due to polluted runoff from agricultural lands, polluted discharges from industrial and municipal facilities and mining operations, decreased flows due to groundwater extraction and drought, and stream

channel instability (Factor A). These threats occur throughout its range, but are more intense in the two tributaries, the Withlacoochee and Santa Fe River systems. In portions of its range, sedimentation has also impacted its habitat.

Other threats to the species include State and Federal water quality standards that are inadequate to protect sensitive aquatic organisms like mussels (Factor D); accidental contaminant releases from industrial, municipal, and mining sources, and as a result of transportation accidents (Factor E); increased drought frequency and higher temperatures as a result of changing climatic conditions (Factor E); greater vulnerability to certain threats because of small population size and range (Factor E); and competition and disturbance from the introduced Asian clam (Factor E). These threats have resulted in the decline of the species throughout its range, and pose the highest risk to populations in the two tributary systems, as evidenced by the species' decline and possible disappearance in the Withlacoochee River, and its decline in the Santa Fe River subbasin. In addition, the species likely has a limited ability to disperse and, therefore, may not be able recolonize areas from which it has been extirpated.

Currently, nearly the entire population resides in the middle and lower reach of the Suwannee River main channel, where the two greatest threats, pollutants and reduced flows, are attenuated by higher flow volumes. Therefore, Suwannee moccasinshell populations in the Withlacoochee and Santa Fe River subbasins are presently facing threats that are high in magnitude, and populations in the Suwannee River main channel are presently facing threats that are moderate in magnitude. Most of these threats, including reduced flows, pollution, degraded water quality, and channel instability, are expected to increase in the future due to human population growth and climate change.

The Act defines an endangered species as any species that is “in danger of extinction throughout all or a significant portion of its range” and a threatened species as any species “that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.” We find that the Suwannee moccasinshell presently is likely to become endangered throughout all or a significant portion of its range within the foreseeable future based on the severity and immediacy of threats currently impacting the species. The Suwannee moccasinshell’s range and abundance have been reduced, and its remaining habitat and populations are threatened by a variety of factors acting in combination to reduce the overall viability of the species. The risk of becoming endangered is high because remaining populations are small, linearly distributed within the mainstem Suwannee River, and numerous threats can impact those populations.

Under the Act and our implementing regulations, a species may warrant listing if it is endangered or threatened throughout all or a significant portion of its range. Because we have determined that the Suwannee moccasinshell is threatened throughout all of its range, no portion of its range can be "significant" for purposes of the definitions of "endangered species" and "threatened species." See the Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species” (79 FR 37577, July 1, 2014).

Therefore, on the basis of the best available scientific and commercial information, we are listing the Suwannee moccasinshell as threatened in accordance with sections 3(6) and 4(a)(1) of the Act. We find that endangered species status is not appropriate, because despite low population densities and numerous threats, the populations in the mainstem presently appear to be stable, which has been attributed to the threats being attenuated and the streambed habitat being stable.

## **Critical Habitat**

Section 3(5)(A) of the Act defines critical habitat as: (i) The specific areas within the geographical area occupied by the species, at the time it is listed on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed upon a determination by the Secretary that such areas are essential for the conservation of the species.

Section 4(a)(3) of the Act and implementing regulations (50 CFR 424.12) require that we designate critical habitat at the time a species is determined to be an endangered or threatened species, to the maximum extent prudent and determinable. Our regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist: (1) The species is threatened by taking or other activity and the identification of critical habitat can be expected to increase the degree of threat to the species; or (2) such designation of critical habitat would not be beneficial to the species. As discussed above (see *Factor B* discussion), there is currently no imminent threat of take or other overutilization for this species, and identification and mapping of critical habitat is not expected to initiate any such threat. In the absence of finding that the designation of critical habitat would increase threats to a species, if there are any benefits to a critical habitat designation, a finding that designation is prudent is warranted. Here, the potential benefits of designation include: (1) triggering consultation under section 7 of the Act, in new areas for action in which there may be a Federal nexus where it would not otherwise occur because, for example, it is unoccupied; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to State or county governments or private entities; and (4) preventing

inadvertent harm to the species. Accordingly, because we have determined that the designation of critical habitat will not likely increase the degree of threat to the species and may provide some measure of benefit, we determine that designation of critical habitat is prudent for the Suwannee moccasinshell.

Having determined that designation is prudent, under section 4(a)(3) of the Act we must find whether critical habitat for the species is determinable. Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist: (i) Information sufficient to perform required analyses of the impacts of the designation is lacking, or (ii) the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat.

As discussed above, we have reviewed the available information pertaining to the biological needs of the species and habitat characteristics where this species is located. On the basis of a review of available information, we find that critical habitat for the Suwannee moccasinshell is not determinable because the specific information sufficient to perform the required analysis of the impacts of the designation is currently lacking, such as information on areas to be proposed for designation and the potential economic impacts associated with designation of these areas. We are in the process of obtaining this information, and we intend to publish a proposed rule in the *Federal Register* to designate critical habitat for the Suwannee moccasinshell in the near future.

#### Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness,



and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed and preparation of a draft and final recovery plan. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species remains endangered or may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies,

nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (<http://www.fws.gov/endangered>) or from our Panama City Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribal, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive-propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Following publication of this final listing rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Florida and Georgia will be eligible for Federal funds to implement management actions that promote the protection or recovery of the Suwannee moccasinshell. Information on our grant programs that are available to aid species recovery can be found at: <http://www.fws.gov/grants>.

Please let us know if you are interested in participating in recovery efforts for the Suwannee moccasinshell. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require consultation as described in the preceding paragraph include issuance of section 404 Clean Water Act permits by the U.S. Army Corps of Engineers; construction and maintenance of roads, highways, or bridges by the U.S. Department of Transportation's Federal Highway Administration; funding of various projects administered by the U.S. Department of Agriculture's Natural Resources Conservation Service and the Federal Emergency Management Agency; and management and any other landscape-altering activities on Federal lands administered by the U.S. Fish and Wildlife Service or the U.S. Forest Service.

Under section 4(d) of the Act, the Service has discretion to issue regulations that we find necessary and advisable to provide for the conservation of threatened species. The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to threatened wildlife. The prohibitions of section 9(a)(1) of the Act, as applied to threatened wildlife through regulations codified at 50 CFR 17.31, make it illegal for any person subject to the jurisdiction of the United States to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these) threatened wildlife within the

United States or on the high seas. In addition, it is unlawful to import; export; deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to employees of the Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. Based on the best available information, the following actions may result in a violation of section 9 of the Act; this list is not comprehensive:

- (1) Unauthorized handling or collecting of the species;
- (2) Destruction or alteration of the species' habitat by discharge of fill material, dredging, snagging, impounding, channelization, or modification of stream channels or banks;
- (3) Discharge of pollutants into a stream or into areas hydrologically connected to a stream occupied by the species; and

(4) Diversion or alteration of surface or ground water flow.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Panama City Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Required Determinations**

*National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

*Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. The Suwannee moccasinshell is not known to occur within any tribal lands or waters.

## References Cited

A complete list of references cited in this rulemaking is available on the Internet at <http://www.regulations.gov> and upon request from the Panama City Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

## Authors

The primary authors of this final rule are the staff members of the Panama City Ecological Services Field Office.

## List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

## Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

### **PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS**

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245; unless otherwise noted.

2. Amend §17.11(h) by adding an entry for “Moccasinshell, Suwannee” to the List of Endangered and Threatened Wildlife in alphabetical order under CLAMS to read as set forth below:

#### **§ 17.11 Endangered and threatened wildlife.**

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(h) \* \* \*

Common Name	Scientific name	Where listed	Status	Listing citations and applicable rules
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CLAMS				
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Moccasinshell, Suwannee	<i>Medionidus walkeri</i>	Wherever found	T	81 FR [ <u>Insert <b>Federal Register</b> page where the document begins</u> ]; [ <u>Insert date of publication in the <b>Federal Register</b></u> ]
* * * * *				

Dated: \_\_\_\_\_ September 26, 2016 \_\_\_\_\_.

\_\_\_\_\_  
Stephen Guertin

*Acting Director, U.S. Fish and Wildlife Service.*

[FR Doc. 2016-24138 Filed: 10/5/2016 8:45 am; Publication Date: 10/6/2016]